



**Third Five-Year Review Report
For
Reilly Tar & Chemical Superfund Site
Indianapolis, Marion County, Indiana**

February 2010

PREPARED BY:

**United States Environmental Protection Agency
Region 5**

Chicago, Illinois

Approved By:

Date:

A handwritten signature in dark ink, appearing to read "Richard C. Karl".

**Richard C. Karl, Director
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2-1-10

Five-Year Review Report

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirements
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
IC	Institutional Controls
IDEM	Indiana Department of Environmental Management
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PCOR	Preliminary Closeout Report
PM	Project Manager
POTW	Publicly Owned Treatment Works
PPB	Parts per Billion
PPM	Parts per Million
PW	Pumping Well
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
ROD	Record of Decision
RPM	Remedial Project Manager
SVE	Soil Vapor Extraction
EPA	United States Environmental Protection Agency
UU/UE	Unrestricted Use/Unlimited Exposure

Executive Summary

The United States Environmental Protection Agency (EPA) has implemented a sequence of remedial actions at the Reilly Tar Site. These remedial actions have addressed contamination at the Site at five operable units (OUs), which include OU 1: perimeter groundwater containment system with off-site discharge to the Southport Publicly Owned Treatment Works (POTW); OU 2: in-situ solidification at South Landfill with soil cover, on-site thermal desorption of soils from the CERCLA areas identified in the OU2 ROD; OU 3: permeable cover over historical wood treatment area; OU 4: concrete cover over portions of northern area of Site and soil vapor extraction (SVE) of two additional areas in the northern portion of the Site; and OU 5: monitored natural attenuation (MNA) of off-site groundwater contamination in conjunction with continued operation of perimeter containment system.

Considerable progress has been made towards achieving remediation goals, with goals achieved for OU 2, OU 3 and OU 4. Contaminant concentrations in Site groundwater have been decreasing at most locations due to the operation of the OU 1 perimeter groundwater containment system. During the past five years, pumping from several perimeter extraction wells was discontinued because of the success of the on-site groundwater remediation.

Closure of the OU 4 SVE system was completed during the period of this review.

The remedial actions have been found to be protective of human health and the environment in the short term. Long-term effectiveness of the remedial actions will continue to be verified through groundwater and cover monitoring. Continued monitoring of groundwater and a potential expansion of the recent biosparge pilot testing will help to determine any potential future changes to the perimeter groundwater containment system. The biosparge pilot testing was designed to investigate if injection of air into the aquifer would accelerate the biodegradation of site contaminants and is ongoing. Currently, the perimeter extraction system is operating as designed, and is meeting remediation goals.

Additionally, long-term protectiveness of the Site remedies requires compliance with effective institutional controls (ICs). Compliance with effective ICs will be ensured by implementing effective ICs and by maintaining, monitoring and enforcing those ICs, as well as maintaining the Site remedy components. To that end, an IC work plan will be required, which will require that restrictive covenants be recorded at currently unrestricted areas, and existing deed notices will be evaluated for consistency with Indiana law to ensure future enforceability and long term stewardship.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Reilly Tar & Chemical Superfund Site		
EPA ID (from WasteLAN): EPA ID# IND000807107		
Region: 5	State: IN	City/County: Indianapolis/Marion County
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Construction completion date: 12/16/1999		
Has Site been put into reuse? YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Dion Novak		
Author title: Remedial Project Manager		Author affiliation: U.S. EPA, Region 5
Review period: October 2009 to December 2009		
Date(s) of Site inspection: December 2, 2009		
Type of review: <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
Review number: <input type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input checked="" type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA On-site Construction at OU # Actual RA Start at OU# NA <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 06/3/2005		
Due date (five years after triggering action date): 06/3/2010		

Issues

1) ICs required on site property by RODs are deed restrictions. Under current Indiana law, the most effective ICs would be Restrictive Environmental Covenants that would be enforceable and would run with the land.

Recommendations and follow-up actions

1) To ensure that effective ICs are implemented, monitored, maintained and enforced, IC evaluation activities shall be conducted to ensure the effectiveness of ICs and long-term stewardship of the Site. A workplan will be submitted by the PRP proposing to prepare and record covenants consistent with current Indiana law, evaluate existing controls and deed notices, and implement a long-term stewardship plan.

Protectiveness Statement

The remedies are protective of human health and the environment in the short term. All threats at the Site have been addressed through the construction of the various Site cover systems, the thermal treatment and solidification of Site soils, the soil vapor treatment of Site soils, and the operation of the perimeter groundwater containment system.

Long-term protectiveness of the remedial actions will continue to be verified through continued groundwater and cap monitoring. Additionally, long-term protectiveness of the remedies requires compliance with effective and enforceable ICs and through long term stewardship by maintaining, monitoring and enforcing those ICs, as well as maintaining the Site remedy components. To that end, an IC workplan has been required, which requires that effective restrictive covenants be recorded at areas where deed notices are currently in place to ensure effectiveness, enforceability and long term stewardship.

I. Introduction

EPA Region 5 has conducted a third five-year review of the remedial actions implemented at the Reilly Tar and Chemical (Reilly) Site in Indianapolis, Indiana. This review was conducted from October 15, 2009 to December 2, 2009. A Site inspection was conducted with representatives from EPA, the Indiana Department of Environmental Management (IDEM), CH2M Hill and Reilly on December 2, 2009. This report documents the results of this review. The purpose of five-year reviews is to determine whether the remedy at the Site remains protective of human health and the environment. The methods, findings, and conclusions of these reviews are documented in the five-year review reports. In addition, five year review reports identify deficiencies found during the review, if any, and identify recommendations to address them.

EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121(c) as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the Site, the President shall review such remedial action no less often than each five years after initiation of such remedial actions to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP Part 300.430(f)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the remedial action.

This is the third five-year review conducted for the Reilly Site. The triggering action for this statutory review is the date of the previous five-year review, June 3, 2005. Because hazardous substances remain at the Site above levels that allow for unlimited use and unrestricted exposure, a five-year review is required by statute.

Site Chronology

Table 1 below lists the chronology of events for the Reilly Site.

<u>Date</u>	<u>Event</u>
1984	Site finalized on the NPL
3/87	RI/FS consent order finalized
1987-91	RI/FS completed at the Site
1989	Reilly changes corporate name to Reilly Industries, Inc

6/92	OU 1 Record of Decision (ROD) signed
9/92	Consent order modified to include RCRA corrective action
9/93	OU 2 ROD signed
9/96	OU 3 and 4 ROD signed
6/97	OU 5 ROD signed
10/97	ESD signed for OU 2
12/16/99	PCOR completed for Site
4/00	First five-year review completed
6/05	Second five-year review completed
12/05	Completion of SVE activities at OU 4 Site area
8/08	Biosparge pilot testing in OU 1 area

II. Background

Physical Characteristics

The Reilly Tar and Chemical Site (Site) is located at 1500 S. Tibbs in Indianapolis, Indiana. Minnesota Street divides the 120-acre parcel into two parcels (See Figure 1). The Oak Park property, occupying approximately 40 acres, is located north of Minnesota Street. The Maywood property, occupying approximately 80 acres, is located south of Minnesota Street.

History of Contamination

Industrial development of the Site began in 1921 when Republic Creosoting Company started a coal tar refinery and a wood treatment operation on the southern end of the property. On-site wood treatment operations occurred from 1921 to 1972. Beginning in 1941, several chemical plants were constructed and operated on the northern end of the property. Environmental problems at the Site are related to the management and disposal of creosoting process wastes and to wastes associated with, and substances used, in the process of manufacturing specialty chemicals.

Land and Resource Use

A mix of residential, industrial and commercial properties surround the Site. Residential neighborhoods are located immediately adjacent to the eastern property boundary of the Oak Park parcel. Two residences are located abutting the northwest corner of the Site. Commercial and industrial properties are also located south and west of the Site. All residents in the area of the contaminated groundwater plume have been connected to the municipal water supply.

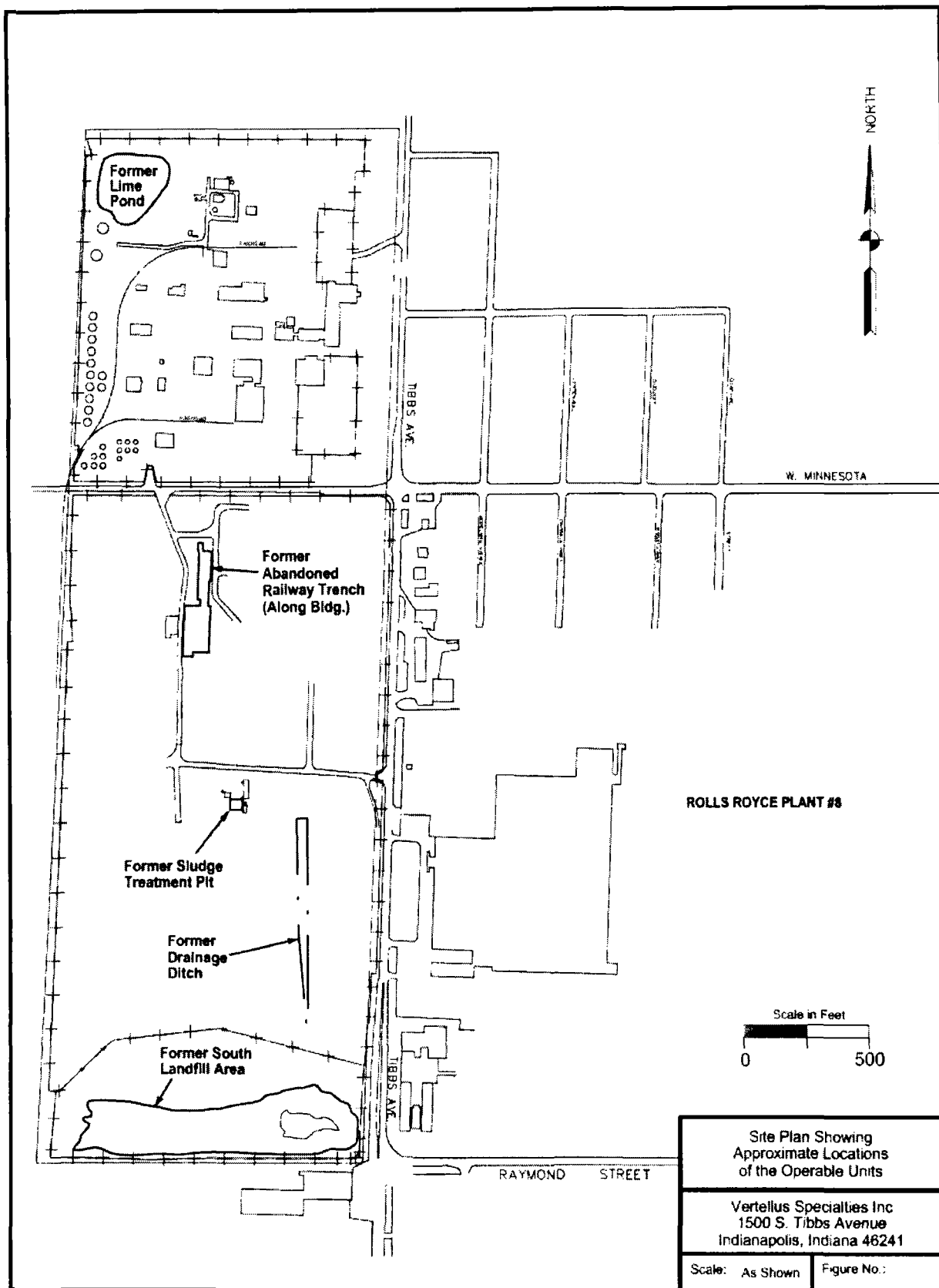


Figure 1

Initial Response

In 1984, the Reilly Site was listed on the NPL making it eligible for cleanup under the Superfund program. In 1987, Reilly agreed to conduct a Remedial Investigation/Feasibility Study (RI/FS) to evaluate and compare remedial alternatives according to the terms of the consent order between EPA and Reilly. The RI identified five main source areas onsite that were the primary contributors to soil and groundwater contamination at the Site. These included the lime pond, the railway trench, the sludge treatment pit, the drainage ditch and the south landfill/fire pond. The RI documented a plume of groundwater contaminated with benzene, pyridine, and ammonia that had migrated off-site at unacceptable levels that required remediation.

Basis for taking action

Remedial investigation sampling identified areas of on-site soil contamination at levels that posed unacceptable risks to human health and the environment. The main risks to human health were derived from potential ingestion of groundwater contaminated with volatile organics and the potential for direct contact exposure to Site soils contaminated with volatile and semi-volatile organics and polynuclear aromatic hydrocarbon (PAH) compounds.

III. Remedial Actions

Remedy Selection

OU1

RAO-prevent off-site migration of groundwater above MCLs for contaminants of concern (benzene, pyridine and pyridine compounds, and ammonia)

Groundwater containment at the Site boundary with groundwater extraction and discharge to off-site POTW and groundwater monitoring to ensure contaminant goals are being met, preventing off-site migration.

OU2

RAO-prevent direct contact with OU2 soils and treatment to reduce contaminant concentrations and reduce leaching to groundwater

On-site thermal desorption for areas of organic soil contamination in the CERCLA areas (Railroad Trench, Drainage Ditch, Sludge Treatment Pit, Lime Pond). In-situ solidification of sludge material in south landfill with soil cover placement when complete with ICs limiting this area to industrial use. On-site thermal desorption remedy was changed in 1997 via ESD to off-site thermal treatment due to the difficulties in treating on-site soils with thermal desorption. A small portion of the soils were actually treated on-site but due to soil characteristics, the off-site thermal treatment option was selected to complete the remedial action in this area.

OU3

RAO-prevent direct contact with OU3 soils

Permeable soil cover installation over southern portion of the Site with appropriate ICs limiting use in this area to industrial use.

OU4

RAO- prevent direct contact with OU4 soils and hot spot treatment to reduce contaminant concentrations and reduce leaching to groundwater

Concrete cover installation over soil contamination areas in the northern portion of the Site and soil vapor extraction to remediate volatile organic contamination in northern Site area with ICs limiting use in this area to industrial use.

OU5

RAO-Finalize interim groundwater extraction system (OU1) and prevent contact with or ingestion of groundwater in the off-site groundwater plume area

Continuation of perimeter containment system outlined in OU1 and off-site monitored natural attenuation.

Remedy Implementation

OU1

8/94 to 9/94 Two extraction wells (PW-1, PW-2) installed with POTW discharge.
8/97 Two additional extraction wells (PW-3, PW-4) added to existing network and chemical addition added due to well fouling.
Fall 2002 Two extraction wells replaced due to broken well screens.
2004 Remedial system evaluation performed at Site.
2008. Biosparge pilot testing on-site.

OU2

7/95 to 11/95 In-situ solidification activities completed at south landfill.
9/95 to 5/96 Thermal desorption for 1500 tons of soil.
10/96 to 1/97 Thermal desorption of 2100 tons of soil.
10/97 ESD changing on-site thermal desorption to off-site thermal treatment.
11/97 to 2/98 Off-site shipment of soil for thermal treatment.

OU3

3/99 to 6/99 Permeable cover installations of 8100 cubic yards of gravel and 1600 cubic yards of topsoil.

OU4

9/98 to 12/98 Concrete cover installation over two hot spot areas.
8/99 to 10/99 Construction of soil vapor extraction (SVE) system.
10/99 to 12/04 Operation of SVE systems.

10/04	Confirmation soil sampling.
12/04	Temporary shutdown of SVE system pending confirmation sampling
5/05	Closure sampling for SVE area.
12/05	SVE operations completed.

OU5

Ongoing monitoring continues of both on- and off-site groundwater qualities to determine the effectiveness of the OU5 remedy.

IV. Institutional Controls

Institutional controls (ICs) are required to ensure the protectiveness of the remedies at the Site. ICs are non-engineered instruments, such as administrative and legal controls that help to minimize the potential for human exposure to contamination and protect the integrity of the remedies. ICs are required to assure the long-term protectiveness for any areas that do not allow for unlimited use or unrestricted exposure (UU/UE) and are required also to maintain the integrity of the remedies.

The four RODs issued for the Site and three CDs entered which require implementation of the remedies selected in the RODs, contain specific IC requirements for access, conducting IC evaluation activities (such as title work) and also require implementation and recording of approved IC instruments (deed restrictions).

The table below summarizes existing institutional controls for the restricted areas.

Media, remedy components & areas that do not support UU/UE based on current conditions	Objectives of IC	Title of Institutional Control
Reilly Tar properties – constructed caps (Cover systems at Kickback Area, North Process Area, and “CERCLA Areas” (South Landfill/Fire Pond; The Former Sludge Treatment Pit; The Former Abandoned Railway Trench; The Former Drainage Ditch; Lime Pond Drum Removal Area)	No excavation in the area of the caps, prohibit residential use of the Site, prohibit on-site excavation	Deed notices are in place for the Site. These will be evaluated and updated to restrictive covenants to ensure consistency and enforceability with Indiana law.
Reilly Tar properties – Other areas of Site which will not allow for UU/UE	No inconsistent uses shall be allowed (e.g., residential)	Restrictive covenant required to ensure consistency and enforceability with Indiana law

Media, remedy components & areas that do not support UU/UE based on current conditions	Objectives of IC	Title of Institutional Control
Other remedial components (e.g. groundwater pump and treat system)	Prohibit interference with remedy components unless prior approval obtained from EPA, record a certified copy of the consent decrees, and record a notice of obligation to provide Site access	Existing deed notice will be updated to a restrictive covenant to ensure consistency and enforceability with Indiana law
Groundwater-current area that exceeds groundwater cleanup standards on-site	Prohibit groundwater use until cleanup standards are met	Existing deed notice will be updated to a restrictive covenant to ensure consistency and enforceability with Indiana law
Groundwater-current area that exceeds groundwater cleanup standard off-site	Prohibit groundwater use until cleanup standards are met	Existing city ordinance prohibits residential use of groundwater

* Maps which depict the current conditions of the site and areas which do not allow for UU/UE will be developed as part of the IC evaluation activities discussed below.

Status of ICs and Follow-up Actions Required

Long-term protectiveness requires compliance with effective ICs. At this time, initial IC evaluation activities conducted by EPA have determined that deed notices have been recorded as required by the RODs and Consent Decrees (CDs) for those ICs identified in the RODs and CDs with the exception of the requirement that Reilly record a notice of obligation to provide access under Section X of the OU 1 CD. However, additional work is needed to ensure that effective ICs are in-place and are monitored and maintained and enforced. In December 2009, EPA sent a letter to the PRPs requiring specific IC study evaluation activities to 1) further evaluate the effectiveness of the institutional controls that exist such as mapping the areas subject to restrictions and conducting title work; 2) to identify and recommend any corrective measures to existing ICs necessary and 3) to recommend any new or additional ICs necessary to achieve and maintain the objectives/performance standards. EPA has determined that Reilly must replace the existing recorded deed notices with restrictive environmental covenants which will "run with the land" in order for the ICs to be fully enforceable and protective under current Indiana law. Once the draft restrictive covenants, which U.S. EPA has asked Reilly to prepare are completed, EPA and IDEM will request that the settling defendants record the restrictive covenants along with conducting other IC evaluation activities to ensure effectiveness of ICs. EPA has already requested that Reilly draft the restrictive covenants and has also required that the PRPs submit an IC workplan, which includes additional

work to ensure long-term stewardship of the remedies selected in the RODs issued for the Site

Current compliance

Based on the Site inspection and data, no inappropriate land or groundwater use was observed. EPA is not aware of Site or media uses which are inconsistent with the stated objectives of the ICs and cleanup goals. Site access continues to be restricted with fencing and signage appropriate for an active facility. As mentioned, based on inspections, monitoring data and interviews with Site officials, there appear to be no inappropriate Site and groundwater uses and no apparent violations of the ICs currently in place, those being the deed notices outlined above. Long-term protectiveness requires compliance with fully enforceable ICs for the land use and remedy component restrictions. Therefore, since the remedy also appears to be functioning as intended, the Site remedies are protective in the short term. However, long-term protectiveness requires compliance with additional, effective and enforceable ICs that will run with the land.

Long term Stewardship

Long-term protectiveness at the Site requires compliance with use restrictions to ensure that the remedies continue to function as intended. To ensure proper maintenance and monitoring and effective ICs, long term stewardship procedures will be reviewed and a plan developed. The plan will call for regular inspections of ICs at the Site and annual certification to EPA that the required ICs are in place and effective. Additionally, development of a communications plan and a one-call system should be explored for long-term stewardship.

System Operation and Maintenance

Primary activities associated with Site O&M, now that the SVE treatment has been completed, include maintenance of the soil and concrete covers and periodic groundwater monitoring for compliance monitoring of the perimeter groundwater extraction system.

V. Progress since the Last Five year Review

This is the third five-year review for the Site.

The protectiveness statements from the 2005 Five-Year Review said:

OU 1

The remedy at OU 1 is protective of human health and the environment.

OU 2

The remedy at OU 2 is protective of human health and the environment.

OU 3

The remedy at OU 3 is protective of human health and the environment.

OU 4

The remedy at OU 4 is protective of human health and the environment.

OU 5

The remedy at OU 5 is protective of human health and the environment.

Actions Taken since the last five-year review

Issue from previous five year review	Recommendation/follow-up action	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Planned Completion
OU1-groundwater monitoring and sewer analysis	Continued groundwater monitoring and analysis and potential repair of on-site sewers	Reilly	Ongoing	Monitoring continues and sewer repairs completed periodically	Ongoing
OU1-incomplete ICs	Requirement for IC for Agency access not complete	Reilly	Ongoing	Not completed-Site access continues to be a non-issue	Ongoing
OU2-monitoring of coal tar seeps pursuant to OU 2 O&M plan	Continued monitoring	Reilly	Ongoing	Materials continue to be monitored and removed as necessary	Ongoing
OU3-cover monitoring	Continued monitoring and maintenance	Reilly	Ongoing	Monitoring and maintenance continue	Ongoing
OU4 – completion of SVE cleanup	Complete confirmation sampling in OU 4 area	Reilly	Dec 2005	EPA approval to discontinue SVE operations	Dec 29, 2005
OU5-MNA monitoring	Continued MNA monitoring of off-site	Reilly	Ongoing	Groundwater continues to	Ongoing

Issue from previous five year review	Recommendation/follow-up action	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Planned Completion
	groundwater along with operation of OU 1 system			be monitored in accordance with sampling plan	

VI. Five-Year Review Process

Administrative Components

Dion Novak, EPA Remedial Project Manager (RPM) for the Site, led the five-year review team. Kevin Herron from the Indiana Department of Environmental Management (IDEM) assisted in the review as the representative for the support agency.

From October 2009 to November 2009, the review team established the review schedule whose components included:

Community involvement,
Document review,
Data Review, and
Site inspection

Community Involvement

In an advertisement in the Indianapolis Star on December 22, 2009, notice was given to the public that the completed third five-year review would be available at the Indianapolis Interim Central Library upon its completion.

Document Review

This five year review consisted of a review of relevant Site documents including the Site RODs, the Site CDs, the annual groundwater trend analysis reports, the previous five year review for the Site (2005) and recent correspondence from Reilly summarizing Site issues over the past five years of remedy operation and maintenance (Nov 2009).

Data Review and Assessment

OU1

The groundwater extraction system at the Site perimeter has been operational since October 1994. The system operates continually pumping approximately 200 gallons per minute of extracted groundwater through sewers located on the Reilly property to the local Southport and Belmont POTWs. Flow rate is monitored daily and water levels are monitored quarterly. Effluent monitoring of the extraction system is performed monthly as well.

The initial groundwater extraction system consisted of two extraction locations (two wells at each, one shallow and one deep). Modifications to the extraction system that were documented in the previous five year reviews included the replacement of three extraction wells at two pumping locations due to operational problems, the use of a chemical additive to clean the extraction well screens, and the installation of two additional extraction well locations.

Annual performance reports prepared by Reilly indicate that off-site levels of contamination continue to decrease. On-site levels of contamination are also decreasing and have done so over the operating life of the system. Levels of organics in on-site groundwater are at or below the ROD cleanup levels of 5 ppb benzene, 35 ppb pyridine, and 10 ppm ammonia in many wells with others in the 10-100 ppb range. Annual trend analyses indicate that the off-site groundwater continues to improve with many locations below the ROD cleanup standards. There are several wells that exceed the ROD goals with maximum existing concentrations of approximately 100 ppb. The analyses also reflect that the on-site sewer repairs that have been completed as part of the overall sewer system evaluation are starting to reduce the on-site groundwater concentrations.

In September 2004, Reilly requested the discontinuation of extraction at wells PW-3 and PW-4 because trend data in the vicinity of these wells had shown improvement in water quality and it was demonstrated that the operation of the remaining extraction wells was sufficient for the perimeter extraction system to achieve the ROD goal of containment at the Site perimeter.

EPA approved the shutdown of PW-4 in a letter dated March 4, 2005, after a review of water quality monitoring data in the area of the well supported this decision. EPA approved the shutdown of PW-3 in a letter dated December 29, 2005, after a review of water quality monitoring data in the area of the well supported this decision. Groundwater is currently being extracted from the remaining two extraction locations (shallow and deep) since the shutdown of PW-3.

Ongoing groundwater monitoring (quarterly, semi-annually, and annually depending on well location) continues to help evaluate the performance of the system and is reported to the Agencies in quarterly Site progress reports and annual trend analysis reports. It is

anticipated that the OU1 system will be operational for some time until cleanup levels are met at the site boundary.

Additional OU 1 Site activities during this reporting period

Sparge pilot testing

During 2007, a workplan for performing sparging/biosparging pilot tests was submitted to the Agencies. The two areas that were considered for sparging included the former sludge treatment pit area and the PW-1 pumping well area. The goals for the former sludge treatment pit area were to demonstrate that sparging could be successfully performed in a shallow aquifer setting at the Site and to improve groundwater quality in the former sludge treatment pit area. The goals for the PW-1 area were to demonstrate that biosparging at the deeper extraction well (PW-1D) could be successfully performed, demonstrating feasibility in changing the approach from pumping/containment to active remediation. The Agency approved the pilot testing plan for the sparge points and a test well, and pilot studies were initiated in August 2008.

Three sparge points were installed near existing monitoring wells in the former sludge treatment pit area. Air was injected with a compressor at each point separately. The results of the pilot were favorable for sparging in the shallow aquifer. A test well was installed near PW-1D and air was injected with a compressor. Again, the results were favorable. Reilly has indicated that a future more expanded pilot test may be proposed to augment the previous pilot testing.

On-site sewer testing and repairs

During this reporting period, EPA required Reilly to summarize the ongoing sewer testing and repair process at the Site. During the RI and previous five-year reviews, it was determined that on-site sewers were leaking and contributing contamination to the OU 1 groundwater system. Reilly committed to testing and repairing the on-site sewers as necessary because this would help the perimeter groundwater system to operate more efficiently. The testing and repair of on-site sewers continues and primarily consists of repairing pressure lines in the process sewers and sewer basins periodically. Additional testing is scheduled for winter 2009 and will be provided to the Agencies in the quarterly progress reports. At a recent meeting, EPA reiterated this request to summarize all of the previous testing data, include the recent testing data, in order to fully gauge the effectiveness of the sewer testing and to provide more site information to help to design a larger scale sparge pilot testing program. This is expected later in 2010.

OU2

Vegetative covers continue to be maintained and are performing as designed. Maintenance to concrete caps involves caulking of any observed crack or joint. Saplings have been growing around the perimeter of the former sludge treatment pit concrete cover. The saplings are cut to grade periodically before any damage to the concrete covers can occur.

Following solidification of the coal tar present in the south landfill, small seeps were discovered at the southwest corner of the Site. These seeps were caused by small accumulations of coal tar not completely solidified before the soil cover was completed. As the previous five year review indicated, these seeps were higher in quantity following the remedial action construction and the seep quantities continue to decrease in frequency and volume over the this reporting period with the latest inspection from fall 2009 showing no new seepage.

In 2009, the total amount of collected material from these seeps was less than ½ drum, which represents a significant decrease in volume from previous years when multiple drums were collected and disposed off-site. Seep areas continue to be monitored and any new material will be removed and containerized.

EPA inspected this area during the recent Site visit and confirmed that monitoring activities continue to satisfy appropriate requirements. There were no seep accumulations at the time of the Site visit. The requirement for future monitoring in this area is outlined in the OU2 O&M plan.

OU3

OU 3 consists of permeable gravel covers over the former kickback area in the south central portion of the Site to blend in with existing gravel covers. The completion of these covers was documented in previous Site reviews and during the latest Site meeting; they were confirmed to be performing as designed.

OU4

The completion of the concrete covers over two former hotspots in the North Process Area has been documented in previous five-year reviews. These covers were inspected at the recent Site meeting and continue to perform as designed.

The SVE system operated from October 1999 through December 2004 in one of the hot spots in the northwest portion of the Site, known as Area A. During this period of operation, O&M was performed monthly with quarterly reports submitted and respiration testing/blower rotations being performed semi-annually. All of the data that was collected supported the successful operation of the SVE system. Closure soil sampling and reporting on the results was completed in August 2005. Reilly submitted a closure sampling report and requested that SVE operations be discontinued. After Agency review, EPA approved the closure report on December 29, 2005 and signaled the end of SVE treatment. Ongoing O&M for the perimeter groundwater system continues to provide monitoring information for the Site area, including the OU 4 areas.

OU5

OU 5 consists of monitored natural attenuation for the off-site groundwater plume. Off-site monitoring wells are monitored in accordance with Site sampling plans. Some wells are monitored quarterly while others are monitored semi-annually with monitoring results reported quarterly to the Agencies. Data and data trends are analyzed and submitted to the Agencies annually in a linear regression analysis report.

Site Inspection

A Site review meeting was held on December 2, 2009, in which representatives from Reilly, EPA and the Indiana Department of Environmental Management (IDEM) discussed Site remediation progress; the same representatives of the PRP and the Agencies also conducted a Site walk through to assess remedy performance. The Site inspection of remedy components was held at that time, including a walk through of the OU4 SVE remediation area, perimeter OU1 well inspections, and visual inspections of the OU2, OU3 and OU4 concrete and soil covers.

No significant issues were identified at any time regarding the various caps, the drainage structures or the Site fencing. The result of the Site inspection indicates that all remedy components are functioning as designed.

VII. Technical Assessment

At present, all of the remedies are performing adequately and achieving ROD performance standards. There are no deficiencies at present with any of the implemented remedies.

Question A: Is the remedy functioning as intended by the decision documents?

Yes.

The review of documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the Site inspection indicate that the remedy is functioning as intended by the RODs and OU2 ESD. The stabilization and capping of contaminated soils has achieved the remedial action objectives to prevent the direct contact with, or ingestion of, contaminants in soil at the Site.

Site access is restricted at present with fencing and signage, as required by the ROD. EPA and the PRPs are in the process of developing proper ICs at the Site as required by the Site CDs. The absence of enforceable ICs that will run with the land affects long-term protectiveness but does not affect any short-term protectiveness determinations as the current ICs required by the RODs (recorded deed restrictions on use) have been recorded as required by the Site CDs.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes.

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

Changes in standards and to be considereds

There have been no changes in standards and to be considereds that would affect the protectiveness of the remedy.

Changes in exposure pathways

There have been no changes in exposure pathways since the RODs were signed.

Changes in toxicity and other contaminant characteristics

There have been no changes in contaminant characteristics during this reporting period that would impact remedy protectiveness.

Changes in risk assessment methods

There have been no changes in risk assessment methods that would impact remedy protectiveness.

Expected progress towards meeting RAOs

The remedy performance is progressing as expected, and it is anticipated to continue to do so. Groundwater monitoring is following the procedures contained in the remedial action workplan and the Site O&M plan. The Site will meet all appropriate standards at the conclusion of the remedial action.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

There is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed and the results of the Site inspection, the remedies are functioning as intended by the Site RODs and the OU2 ESD. There have been no changes in the physical conditions of the Site that would impact the protectiveness of the

remedies. EPA determined in the last five-year review that proper and enforceable ICs were not in place at the Site, which impacts long term protectiveness of the Site remedies. These are still not complete but Reilly has been sent a recent letter asking for this to be completed early in 2010. The results of the IC updates will be reported in the next five-year review.

VIII. Issues

Issue	Affects current protectiveness (Y/N)?	Affects future protectiveness (Y/N)?
ICs required on site property by RODs are deed restrictions. Under current Indiana law, the most effective ICs would be Restrictive Environmental Covenants that would be enforceable and would run with the land	N	Y

IX. Recommendations and Required Actions

Issue	Recommendations/follow-up actions	Party responsible	Milestone date	Affects current protectiveness	Affects future protectiveness
ICs required on site property by RODs are deed restrictions. Under current Indiana law, the most effective ICs would be restrictive environmental covenants that would be enforceable and would run with the land	To ensure that effective ICs are implemented, monitored, maintained and enforced, IC evaluation activities shall be conducted to ensure effectiveness of ICs and long-term stewardship of the Site. A workplan will be submitted proposing to prepare and record covenants consistent with Indiana law, evaluate existing controls and deed notices, and implement a long-term stewardship plan.	Reilly (w/EPA oversight)	Dec 2010	N	Y

X. Protectiveness Statement

OU 1

The remedy at OU 1 is protective of human health and the environment.

OU 2

The remedy at OU 2 is protective of human health and the environment.

OU 3

The remedy at OU 3 is protective of human health and the environment.

OU 4

The remedy at OU 4 is protective of human health and the environment.

OU 5

The remedy at OU 5 is protective of human health and the environment.

The remedies are protective of human health and the environment in the short term. All threats at the Site have been addressed through the construction of the various Site cover systems, the thermal treatment and solidification of Site soils, the soil vapor treatment of Site soils, and the operation of the perimeter groundwater containment system.

Long-term protectiveness of the remedial actions will continue to be verified through continued groundwater and cap monitoring. Additionally, long-term protectiveness of the remedies requires compliance with effective and enforceable ICs and through long term stewardship by maintaining, monitoring and enforcing those ICs, as well as maintaining the Site remedy components. To that end, an IC workplan has been required, which requires that effective restrictive covenants that run with the land be recorded at areas where deed notices are currently in place to ensure effectiveness, enforceability and long term stewardship.

XI. Next Review

The next five-year review will be conducted within five years of the completion of this report, which will be February 2015.